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# Australasian Plant Conservation

NEWSLETTER OF THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION

VOLUME 12 NUMBER 1 • JUNE 2003

Threatened Plants of Cape York
Report on the 5th ANPC Conference
Mysteries of the Megalong Valley

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**_Australasian Plant Conservation_ Editors**

For this issue: Dr Keith Binnington and Fiona Hall

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**Front cover:** A yet-to-be-described species of bottlebrush, currently in the genus *Callistemon* and known variously as *Callistemon* or *Melaleuca* sp. *nov.* "Megalong Valley". In a forthcoming major review of these and related genera *Callistemon* will be relegated to a subgenus of *Melaleuca*. For a full report see the article by Steve Douglas, pages 5–8.

Photo: Steve Douglas

Cover design: Siobhan Duffy, CSIRO Plant Industry

### ANPC Inc. Mission Statement

*"To promote and develop plant conservation in Australia"*

### Contributing to *Australasian Plant Conservation*

*Australasian Plant Conservation* is a forum for information exchange for all those involved in plant conservation: please use it to share your work with others. Articles, information snippets, details of new publications or research, and diary dates are welcome. The deadline for the September 2003 issue is the 11th August 2003.

Authors are encouraged to submit images with articles or information. Please submit images as clear prints, slides, drawings, or in electronic format. Electronic images need to be at least 300 dpi resolution, submitted in at least the size that they are to be published, in tif, jpg or gif format.

Please send typed or handwritten articles, no more than two A4 pages (or 1100 words), by fax, mail, email, or on diskette. If sending by email, please send as a MS Word (2000 compatible) or rich text format attachment to: anpc@anbg.gov.au.

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# National Coordinator's Report

*Jeanette Mill*

Welcome to this second issue of the ANPC's new look newsletter, *Australasian Plant Conservation* (formerly *Danthonia*). Many thanks to Kings Park and Botanic Garden for producing the first issue of *Australasian Plant Conservation*. Thanks especially to David Merritt for all his work. The stunning cover image was even created by David and Kingsley Dixon.

**Fifth national conference and workshops a success**

The Fifth Australian Network for Plant Conservation National Conference and Conservation Techniques Workshops (*Recovery: A Decade Towards a Biodiverse Future*) attracted over 160 delegates to the Geelong Conference Centre in late February. The event was hosted by the City of Greater Geelong and support for the workshops was provided by the Australian Government Envirofund.

Two days of papers covered a diverse range of topics, including: the Global Strategy for Plant Conservation, a co-presentation from ANPC President Kingsley Dixon (Kings Park and Botanic Garden, Perth), Tim Pearce (Millennium Seed Bank, Kew, UK) and David Given (International Centre for Nature Conservation, Lincoln University, New Zealand); and following from outcomes of the previous conference, a good contingent of presentations on the 'forgotten flora' — the cryptogams — now not so forgotten.

Nineteen Conservation Techniques Workshops were held, allowing delegates to further share the expertise of the assembled specialists in a hands-on small workshop setting. The microscopes, seed samples and lichen specimens came out, and in depth discussions were held on subjects such as conservation genetics and translocation.

The resolutions agreed at the final plenary session are presented in this issue (see pages 4–5).

Enormous thanks go to all of the conference and workshop supporters, the presenters and the committees for their efforts in making this an outstanding conference for the ANPC and for Geelong.

**New ANPC plant conservation manual**

The 400 page ANPC manual, entitled *Plant Conservation: Approaches and techniques from an Australian perspective*, is now available (see the back cover and enclosed order form). A staggering array of quality information has been provided in 39 chapters over 11 modules by specialists from across Australia and overseas.

In his foreword, Carl Binning, Chief Executive of Greening Australia has written: *"It will become one of the most well used tools in the kit of practitioners everywhere, whether they work in the paddock or the office. The manual draws on the expertise of some of the leading exponents of practical conservation in Australia. The techniques and methods have been tested and refined by a broad network of plant conservation practitioners."*

The manual is based on the series of training courses that the ANPC has run to date, and covers a comprehensive range of topics to be considered when undertaking conservation and rehabilitation. The modules contained in the manual are listed below.

1. Principles and Ethics of Conservation
2. Conservation Instruments and Initiatives
3. Getting Started: Information for Conservation
4. Conservation in the Field
5. Rehabilitation and Translocation
6. Monitoring and Adaptive Management
7. Ecological Communities
8. Propagating Threatened Flora for Conservation
9. Cryptogams
10. Training
11. References and Resources

Context boxes, glossaries, key reading, cross referencing, reference lists, web sites and author contact details complement the detailed information contained in each chapter.

Many, many thanks to all the authors and supporters of this project, and to all who have contributed to the ANPC training program.

Order forms will be distributed through *Australasian Plant Conservation* and email.

The project was assisted by the New South Wales Government through its Environmental Trust.

**Translocation guidelines review**

The review of the ANPC's *Guidelines for the Translocation of Threatened Plants in Australia* is progressing well; the working group has now drafted chapters for the revised edition.

# Report on the 5th ANPC Conference and Conservation Techniques Workshops

*(Recovery: A Decade Towards A Biodiverse Future)*

*Paul Gibson Roy, PhD student, Burnley College, University of Melbourne*
*Email p.gibson-roy@pgrad.unimelb.edu.au*

John Landy, AC, MBE, Governor of Victoria speaking about Geelong's biodiversity from a naturalist's perspective. Copyright Jeanette Mill, ANPC.

Friends of Geelong Botanic Gardens gave delegates a friendly and professional welcome at the registration desk. Copyright Jeanette Mill, ANPC.

It is not an exaggeration to say that I had been waiting eagerly for the 5th ANPC conference since attending the 4th at Albury/Wodonga some years past. That conference had been my first introduction to a conservation focused network and I was hooked.

I had started on a research project of my own, and so was able to submit a paper for the fifth ANPC conference. This time, I was not only looking forward to being exposed to a fascinating coverage of conservation research and practical applications of conservation techniques, but also to the nervousness I knew I would feel as the time of my presentation approached.

In his welcome to the conference participants Rob Small suggested the conference and its setting would provide an opportunity for all to congregate with like-minded people and advance the cause of biodiversity protection. I think that by and large he was right. Part of the joy of attending this conference was to be immersed in the enthusiasm generated by those attending, contributing to, and organising the event. It was quite infectious.

The organising committee selected what I thought a compelling range of topics for presentation and discussion and the presentations were of a high standard. It would be pointless to mention any in particular as all presenters brought to life their own area of interest or research in a whole manner of styles and techniques. My nervousness peaked late in the second day when with huge relief I returned to my chair, complimentary bottle of wine in hand thinking, 'I hope what just came out of my mouth made some sense to everyone stuck out there'. Regardless, I am grateful for the support and encouragement of fellow attendees.

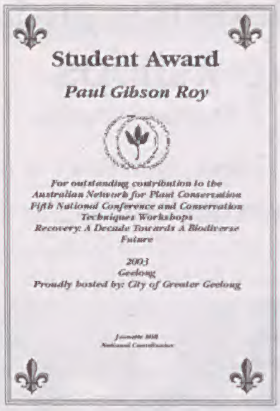
Because of a teaching commitment I had to miss the field trip, which as I anticipated, was highly successful (reported as such to me by C.J. Delpratt).

Dr Kingsley Dixon (centre) conducting a seed dormancy workshop. Copyright Jeanette Mill, ANPC.

The first half of the week had been taken up by a wonderful range of papers and posters. The second, with workshop sessions, was even better. Each workshop I attended increased the level of information above that given in the paper sessions with presenters able to give in-depth insights and practical instruction. It seemed everyone's dilemma revolved around wanting to attend all workshops offered at each session.

There were many highlights for me during the week in Geelong. The conference dinner was certainly one. It was a great opportunity to relax and get to know the person behind the name-tag. The guest speaker had me absolutely captivated from the beginning to the end of his presentation on New Guinea. It was totally out of left-field for me, but capped off a most enjoyable evening.

Paul Gibson Roy was the winner of the student prize at the 5th Australian Network for Plant Conservation National Conference and Plant Conservation Techniques Workshops in February. Paul worked tirelessly, not only presenting his own paper, Indigenous Seed Mixtures to Re-establish South-eastern Australian Lowland Grassland Communities, but also co-presenting workshops on Plant Propagation and Working with Mycorrhizas. Paul is a PhD Candidate at the University of Melbourne, Burnley College. He receives an on-line subscription to *Plant Species Biology*, donated by Blackwell Publishing, one year's membership of the ANPC and a certificate. Good luck with your studies Paul.



**Student Award**

***Paul Gibson Roy***

*For outstanding contribution to the*
*Australian Network for Plant Conservation*
*Fifth National Conference and Conservation*
*Techniques Workshops*
*Recovery: A Decade Towards A Biodiverse*
*Future*

*2003*
*Geelong*
*Proudly hosted by: City of Greater Geelong*

I have mentioned the skill and passion of the paper and workshop presenters. I must also comment on what I know isn't taken for granted by participants. The organisation of this conference (Jeanette et al), was at all levels quite superb. I shudder to think of the amount of work involved in running such an event successfully. I know it probably helps when the organisers are committed to the cause, but boy they did a good job. Those at the front table each day were absolute champions. It just felt like it was going to be a good day when you had finished dealing with them. Staff at the centre were a pleasure to deal with at all times, and the setting for the conference was an excellent choice.

Yalmambirra, lecturer from Charles Sturt University, speaking about the Mungabareena Reserve; Wiradjuri Reconciliation Project
Copyright Jeanette Mill.

The fifth ANPC conference has left me once again looking forward to the sixth. I would like to thank the organisers for the opportunity to take part in this event. It was a great thrill to present my area of interest to such an accomplished gathering, and to receive encouragement and support from the many talented people attending.

# Taking forward the Global Strategy for Plant Conservation in Australia

*Recommendations from the Fifth National Conference of the Australian Network for Plant Conservation*

In April 2002 the Convention on Biological Diversity adopted a Global Strategy for Plant Conservation (GSPC) in recognition of the continuing loss of plant diversity worldwide. The global strategy is a comprehensive programme developed over a two year period and contains objective measures of how well signatory countries are performing compared with other countries and against a global mean. The GSPC has well defined and achievable goals across a wide range of activities and sectors including integrated conservation (ex situ and in situ) of plant diversity, conservation on production lands, recognition of red-listing and important plant areas, all linked to targets for research, information management, public education and awareness to attain these goals. The challenge for Australia and the region is to meet and even exceed these targets by the 2010 milestone date set for evaluating progress.

To take this forward, the plenary session of the ANPC's fifth national conference (held in Geelong in March this year) proposed that the ANPC should send letters to Environment Australia (EA), the state conservation agencies and CSIRO to take forward EA's proposal for a national meeting on the GSPC.

Tim Pearce, Millennium Seed Bank, Kew, UK, speaking on A Global Strategy for Plant Conservation in Australasia.

The plenary endorsed the following wording, although the plenary also agreed that the ANPC Committee and the CHABG (Council of

Heads of Australian Botanic Gardens) liaison should have the freedom to develop the exact phrasing and context of the letter/s:

1. The conference plenary commends EA for taking the initiative in raising awareness of the GSPC and flagging the option of a national meeting of stakeholders to review progress and consider additional activities that might be pursued.

2. The conference urges states and territories to support a national meeting on the GSPC.

3. The conference recommends that EA invites the Australian Network for Plant Conservation to participate in the proposed meeting as the primary NGO for plant conservation in Australia.

4. Acknowledging the crisis in plant conservation, recognising that plant species do not always follow national boundaries and recognising Australia's technological and scientific ability, the conference recommends that Australia consults with relevant parties to the CBD especially adjacent regional countries (Oceania, near south-east Asia and New Zealand) and other parties to work with the GSPC partner organisations and steering group towards implementation of the GSPC.

5. Acknowledging that the ANPC is the internationally recognised plant conservation NGO within Australia and the wider region, the conference recommends that the ANPC be invited to facilitate a meeting of NGOs involved in plant conservation in Australia in raising awareness of the GSPC and assisting these NGOs in assessing their role in achieving relevant targets.

For detailed information on the GSPC, see *Global Strategy for Plant Conservation* (available from the CBD Secretariat or BGCI, London, UK, website: http://www.bgci.org.uk), and the chapter in the ANPC's new manual *Plant Conservation: Approaches and techniques from an Australian perspective* (details on the back cover of this newsletter and in the enclosed order form). For the full text of the strategy please refer to the CBD website (http://www.biodiv.org), and look under COP 6 decisions for decision VI/9.

# Mysteries of the Megalong Valley: another rare plant for the Blue Mountains

*Steve Douglas*
*ESP Ecological Surveys & Planning, Chisholm ACT*
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A yet-to-be-described species of bottlebrush, currently in the genus *Callistemon*, will be recognised later this year and adds to the long list of rare, threatened and ultra-endemic plants from the Greater Blue Mountains. The author and colleagues R. Doig and S. Douglas Snr discovered it during fieldwork for an extensive project of vegetation mapping on behalf of Blue Mountains City Council (Douglas, 2001). Associated documentation and vegetation maps are available from the council with a subset of information accessible through its website at <http://www.bmcc.nsw.gov.au>.

The plant is currently known variously as *Callistemon* or *Melaleuca* sp. *nov.* "Megalong Valley", with the variation due to a forthcoming major review of these and related genera by Lyn A. Craven of the Australian National Herbarium, CSIRO, Canberra, in which *Callistemon* will be relegated to a subgenus of *Melaleuca*. Because it currently fits within *Callistemon*, it is assigned that genus for the purposes of this article. It is proposed that the species will be formally named with the epithet "*carbonicola*" in reference to the geological formation with which it is associated i.e. the Permian Illawarra Coal Measures.

The yet-to-be-described bottlebrush. Copyright Steve Douglas.

The plant has been seen only in a relatively small area of the Megalong Valley, below the vast sandstone escarpment of the higher Blue Mountains, west and southwest of the townships of Blackheath and Katoomba. It is notionally limited to the relatively lower country of the Coxs River valley. A more detailed description of the location cannot be provided as the plant is potentially threatened by over-collection of seed and/or cuttings for horticulture. Some are also being destroyed by rural and rural-residential development and activities. Much of the Megalong Valley is in private ownership, with significant access constraints. Until the relatively detailed mapping for the Council was undertaken during 2000 and 2001, its native flora was poorly known, being covered in part by the 1:100,000 Katoomba vegetation sheet (Keith & Benson, 1988). Previous vegetation mapping and descriptions were significantly limited in detail and accuracy due to scale and access issues, though interestingly, some of the more accurate observations of its vegetation communities are found in the notes for the 1:100,000 Katoomba soil landscape sheet by King (1994). Much of the Valley was believed to have supported Yellow Box (*Eucalyptus melliodora*) woodland with a fringe of primarily sandstone-based forests and woodlands on the northern and eastern margins. Intensive field surveys and relatively high resolution air photo interpretation (including some coverage by 1999 1:6000 infrared photos) by Douglas (2001) significantly changed the understanding of the Megalong Valley's flora and resulted in several range extensions (including rare or threatened flora), the description of previously unknown and/or poorly known communities, and the discovery of C. sp. *nov.* Megalong Valley.

Adult plants of C. sp. *nov.* Megalong Valley grow to about four metres and generally resemble large *C. citrinus*, though they are more tree-like. Flowers are light pink and significantly longer and narrower than those of *C. citrinus*, with which it is sympatric (see glossary). Only mature specimens of C. sp. *nov.* Megalong Valley have been observed in the wild, possibly due to a relatively infrequent fire interval. However, it is understood that fires occurred in the Megalong Valley during the summer of 2002–03. If areas of suitable habitat were burnt, germination from seed may now occur as ample seed is produced and there is no known problem with viability. Another explanation for the absence of juveniles and an uneven age distribution (all are adults, possibly from only two cohorts) is an association with disturbance other than fire as has been reported for numerous other rare and threatened flora of the Greater Sydney region including *M. deanei, Darwinia biflora, Tetratheca glandulosa* (Douglas, 1999a; Douglas & Burcher, 1999; Douglas, 2000; Felton, 1993; Virtue 1991a & b; Travers Morgan, 1990), *Persoonia hirsuta* (*sens. lat.*) (Douglas & Burcher, 1999), *P. bargoensis, P. glaucescens* (Douglas, 1999b), and *Leucopogon fletcheri* ssp. *fletcheri* (Douglas, 1998). This is consistent with the observation that most specimens were found on or near trail margins or in areas recovering from clearing for grazing, with only few in sites that appear undisturbed other than by the likelihood of earlier fire. Of those in the relatively undisturbed sites, some were in naturally open areas such as treeless sedgeland/low wet heath and others were much larger plants on the margins of overmature tall shrubland.

This mature specimen is part of a small roadside stand at risk from road and other maintenance. It appears to be resprouts associated with the original clearing of the road and verge. Far larger specimens are inside the nearby property where they appear to have resprouted or possibly germinated after partial clearing of some relatively fertile alluvial flats associated with a drainage line. Copyright Steve Douglas.

Most are associated with extensive deposits of colluvium that have perched aquifers fed by seepage through aquicludes in the Permian Illawarra Coal Measures. The high rainfall of the upland plateau readily filters through the comparatively permeable sandstone and later emerges when it meets the Coal Measures that occur relatively low in the escarpment face. Such conditions also support the well-known rainforest along upper Pulpit Hill Creek, seen when driving into the Valley from Blackheath.

As most of the Megalong Valley gets much less rain (~650 mm p.a.) than nearby Katoomba (~1600 mm p.a.) because of bi-directional rainshadow effects, the species was only found in the groundwater-dependent shrub swamps relatively close to the escarpment. Furthermore, much of the Valley has a very different geology of Ordovician granite, the majority of which supports dry sclerophyll open forest to woodland with *Eucalyptus tereticornis, E. eugenioides, E. viminalis/dalrympleana* and *Angophora floribunda* (area mapped as unit 10o in Keith & Benson, 1988; Megalong Granite Woodland in Douglas, 2001). Much of this woodland community has been cleared for pastoralism, and is now arguably recognisable as an endangered ecological community.

By contrast, the southern margins of the Valley feature very steep terrain of Devonian metasediments supporting woodland of *E. crebra* and open forests of *E. tereticornis, E. eugenioides, E. punctata, E. viminalis* and *A. floribunda* (part of the Kowmung Wilderness Complex of Keith & Benson, 1988 and Douglas, 2001). Only the eastern and northern fringes of the Valley associated with the escarpment support the Permian Shoalhaven Group of sediments. However, much of this does not benefit from groundwater flows via the associated Coal Measures and consequently supports a range of drier woodlands (*E. sclerophylla*), forests (*E. eugenioides/ E. globoidea, E. punctata* and *A. costata*) and heath communities (unit 9 m of Keith & Benson, 1988; Megalong Footslopes Forest of Douglas, 2001). None of these communities provides suitable habitat for C. sp. *nov.* Megalong Valley.

C. sp. *nov.* Megalong Valley is primarily associated with closed scrub dominated by *Leptospermum* spp. including *L. morrisonii, L. juniperinum* and *L. obovatum* with occasional emergent *Melaleuca linariifolia* and *Eucalyptus camphora.* This community is a newly described variant of the Coxs River Swamps (unit 20b) recognised by Keith & Benson (1988) known as Megalong Valley Swamp (Douglas, 2001). It contrasts with the Coxs River Swamp in structure (Coxs River Swamps tend to be more open and the tallest shrub layer is much lower; Megalong Valley Swamps are generally closed to tall-closed scrub) and to a lesser extent, floristics (Coxs River Swamps feature *L. obovatum*, a species that is rare or absent from Megalong Valley Swamps). The understorey is generally sparse due to the dense canopy, but includes various sedges and wetland herbs. The species occurs primarily on the margins of such vegetation and along disturbance margins such as those caused by pipelines and roads, or cleared for grazing, where it appears to have a competitive advantage and to be involved with recolonisation. A small number of plants have been found in a nearby riparian community within open forest in biotic sympatry with *C. citrinus*, though within the region such habitats are normally occupied by *C. citrinus* alone. The westernmost occurrence where the species was first observed in very low numbers is within a shallow valley floor sedgeland in which relatively small specimens occur as scattered emergents above the sedge and low shrub layers.

Neither C. sp. *nov.* Megalong Valley nor its rare habitat are represented in NPWS estate or the Greater Blue Mountains World Heritage Area. However, known and potential habitat occurs on vacant Crown land that could readily be protected in some form, as well as on privately owned land at risk from further clearing. During vegetation mapping, a large corridor of Crown land was identified below the escarpment, with recommendations made that it be formally reserved. It would also appear to warrant inclusion in the World Heritage Area as it is generally in excellent condition and contains a range of plant communities (some of which are not reserved elsewhere), high levels of plant diversity, includes rare and threatened plants and animals, and has very high visual amenity. Much of the habitat is currently afforded a degree of protection through its zoning as Environmental Protection (Significant Vegetation) in the Blue Mountains Local Environment Plan 2002 (L. Moore, pers. comm.).

The species has been nominated for listing as Vulnerable under the *NSW Threatened Species Conservation Act 1995* and it is anticipated that once bilateral agreements are in place between the NSW and Federal Governments in relation to listing of threatened biota, it will also be listed as Vulnerable under the *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999.*

C. sp. *nov.* Megalong Valley will be grown from seed collected during December 2002 and additional seed will be contributed to the seed banks at Mt Annan and Melbourne Botanic Gardens. It has considerable horticultural potential and it is likely that its commercial availability under license will both act to protect the wild populations from inappropriate collection of seed and cuttings, and will provide ex-situ populations as a backup in the event that the wild populations are destroyed or severely depleted. A similar approach has been adopted for threatened and ultra-endemic flora such as *Grevillea iaspicula* and *G. rivularis.*

Nothing is currently known about the species' seed viability or seedling survival. Experience with naturally rare (as opposed to rarity due to loss of habitat) *Callistemons* and *Melaleucas* in the Sydney area does not indicate whether viability and survival are likely to be a key factor in this species' rarity, as the Vulnerable *C. linearifolius* has no such problems and is now widely cultivated, whereas the Vulnerable *M. deanei* appears to have major problems with viability and/or seedling survivability and, like C. sp. *nov.* Megalong Valley, no juveniles have ever been reported in the wild (Douglas, 1999; Douglas & Burcher, 1999; Douglas, 2000; Felton, 1993; Virtue 1991a & b; Travers Morgan, 1990).

## Acknowledgments

Thanks to Lyn Craven (CSIRO) and Les Moore (Blue Mountains City Council) for comments on the draft of this article.

## Glossary

Aquicludes: a geologic formation that limits the movement of groundwater.

Colluvium: sediment derived from the action of gravity on the escarpments.

Devonian: a period of geological time from 400 to 360 million years ago.

Metasediments: a sediment or sedimentary rock that shows evidence of having been changed by one or more of heat, pressure (e.g. folding) and hydrothermal solutions.

Ordovician: a period of geological time from 500 to 400 million years ago.

Permian Illawarra Coal Measures: a younger member of the Shoalhaven Group (I think), which in this area tends to outcrop in or at the base of escarpments. Its relative structural weakness and higher erosivity is a key factor in the formation and movement of the escarpment face. The overlying strata that forms most of the escarpment and associated plateaux comprise younger Narrabeen Group rocks, dominated by sandstone.

Permian Shoalhaven Group: these rocks contain a relatively diverse range of sediments and in this area, silty sandstones and mudstone predominate, forming footslopes and associated hilly terrain below the escarpments.

Riparian: associated with the margins of a watercourse.

Sympatric, and biotic sympatry: populations, species, or taxa occurring in the same geographical areas where they may occupy the same habitat (biotic sympatry).

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# The Search Continues: Threatened Plants of Cape York

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*The following is a brief follow-up to articles by John Clarkson and Ian Fox (June 2000 issue of* Danthonia, *vol. 9, no. 1) on conservation studies by the Queensland Parks and Wildlife Service (QPWS) of threatened plant species on Cape York Peninsula (CYP).*

During 2002, as part of my BSc Honours, I worked with the QPWS on a project funded by the Natural Heritage Trust, which aims to secure the conservation of rare and threatened plant species on Cape York. I concentrated on two species: *Coix gasteenii,* a tropical grass known from only five populations and listed as Endangered in Queensland (Fig. 1), and *Jedda multicaulis,* a low spreading shrub known from only two populations and listed as Vulnerable both in Queensland and nationally (Fig. 2). Both occur in the south-eastern region of CYP. I aimed to see if these species were truly rare or merely perceived as such because of inadequate sampling.

By systematically searching poorly sampled or unsampled environmental space within the study area, defining the environmental envelope occupied by the two species

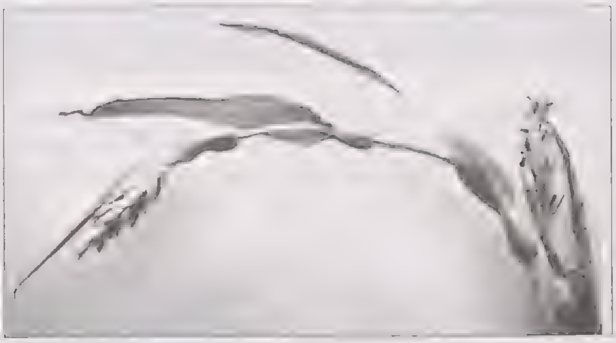

Fig. 1. *Coix gasteenii*, a tropical grass known from only five populations. Copyright Liz Poon.

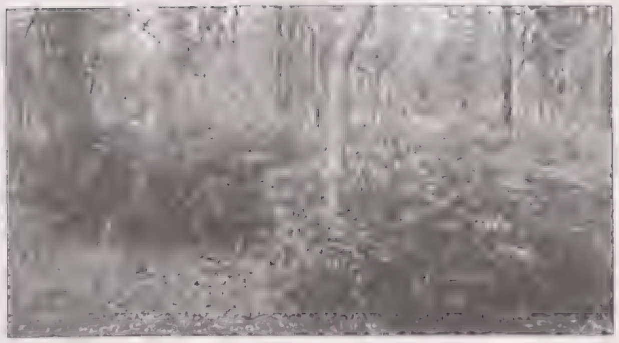

Fig. 2. *Jedda multicaulis*, a low spreading shrub, known from only two populations. Copyright Liz Poon.

and predicting potential locations of new populations with spatial modelling, it was possible to narrow down the search area. This approach could also be adapted for other rare plant species. Several stages were involved:

**Stage 1**: *All existing field records of the species (presences and absences) were mapped in environmental space.*

These maps were then overlaid with maps of geology, vegetation and climate surfaces. The environments inhabited by the plants and ones from which they are absent were thus defined.

**Stage 2**: *The same or similar environments as those of known plant locations, and of environments that had been poorly sampled or not been previously sampled, were surveyed.*

By ensuring that as much of the environmental space within the study area as possible was sampled, the degree of uncertainty in the spatial models was reduced. If several new populations had been found in the poorly sampled or unsampled space, the search would have been stopped and the conclusion made that the species had been perceived as rare due to inadequate sampling.

**Stage 3**: *The environmental envelope for each species was defined.*

The surveys were further refined by using BIOCLIM and DOMAIN modelling methods to predict potential locations of new populations. These areas were also surveyed as much as time and resources would allow. One previously unknown population of *C. gasteenii* was located. While I was unable to thoroughly ground truth the predicted locations for *J. multicaulis*, this could be done as resources become available in the future.

The spatial models assume that the species have been located in ideal rather than marginal habitat and indicate that both species *are* restricted in their distribution. Since few populations have been located it would appear that, for now, both species are truly rare. Research into the life histories of each is needed to understand better why they occur where they do and to determine the factors limiting their distribution.

I wish to acknowledge the help and support of the QPWS, the station owners of CYP, and James Cook University during my project.

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# New Zealand Plant Conservation Network Established

The New Zealand Plant Conservation Network has now been incorporated and a committee appointed, chaired by Mike Oates. Members of the Network will collaborate to protect and restore New Zealand's indigenous plant life and their natural habitats and associated species. Membership will comprise a range of people, community groups and organisations throughout New Zealand. Activities will include disseminating information about indigenous plant species and communities, coordinating ex-situ management of threatened plants, running plant conservation training programs and undertaking conservation activities to protect threatened plants and communities.

An inaugural meeting of the Network is to be held at Te Papa Tongarewa in Wellington on Saturday 2nd August 2003. For further information about the network, membership or the inaugural meeting please contact Mike Oates (Michael.oates@wcc.govt.nz), John Sawyer (jsawyer@doc.govt.nz) or Tim Park (tpark@qe2nattrust.org.nz).

## Research Roundup

Close, D.C., & Davidson, N.J. 2003. **Revegetation to combat tree decline in the Midlands and Derwent Valley Lowlands of Tasmania: Practices for improved plant establishment.** *Ecological Management & Restoration.* 4(1): 29–36.

Jusaitis, M., et al. 2003. **Reproductive biology of the endangered *Brachycome muelleri* (Asteraceae), an endemic herb of Eyre Peninsula, South Australia.** *Australian Journal of Botany.* 51(2): 179–188.

Kelly, C.L., et al. 2003. **Impacts of tourism on threatened plant taxa and communities in Australia.** *Ecological Management & Restoration.* 4(1): 37–44.

Kirchner, F., et al. 2003. **Role of corridors in plant dispersal: an example with the endangered *Ranunculus nodiflorus.*** *Conservation Biology.* 17(2): 401–410.

Mendel, L.C., & Kirkpatrick, J.B. 2002. **Historical progress of biodiversity conservation in the protected-area system of Tasmania, Australia.** *Conservation Biology.* 16(6): 1520–1529.

Merritt, D.J., et al. 2003. **Water sorption characteristics of seeds of four Western Australian species.** *Australian Journal of Botany.* 51(1): 85–92.

Page, M.J., et al. 2002. **Effectiveness of three seed-trap designs.** *Australian Journal of Botany.* 50(5): 587–594.

Salafsky, N., et al. 2002. **Improving the practice of conservation: a conceptual framework and research agenda for conservation science.** *Conservation Biology.* 16(6): 1469–1479.

Compiled by Dr Phillip Ainsley, Botanic Gardens of Adelaide

## Electronic Addresses

### Address Change

NSW National Parks and Wildlife Service has changed its website from http://www.npws.nsw.gov.au to:

**http://www.nationalparks.nsw.gov.au**

### Medicinal Plant Specialist Group (MPSG)

The Medicinal Plant Specialist Group (MPSG) of the International Union for the Conservation of Nature (IUCN) Species Survival Commission now has a website. For its newsletter, *Medicinal Plant Conservation*, current program, activities, and members list go to:

**http://mpsg.org**

### Conservation Management Network

A Conservation Management Network (CMN) is a network of remnants, their owners or managers, and other interested individuals. A CMN usually focuses on one ecological community, such as a grassy woodland, wetlands of a river system, or a particular forest type.

**http://www.conservation-management-networks.net**

### ConserveOnline

This is a public discussion group on remote sensing and geographic information systems (GIS) for conservation.

**http://groups.conserveonline.org:8080**

### *Species* — Newsletter of the Species Survival Commission

This newsletter is available online at:

**http://www.iucn.org/themes/ssc/species/spec-int.htm**

### REDD (Regional Ecosystem Description Database)

REDD is a database that accompanies the Queensland Herbarium regional ecosystem mapping.

**http://www.env.qld.gov.au/environment/science/herbarium/regional_ecosystems**

### Public inquiry — Impacts of Native Vegetation and Biodiversity Regulations

A 12-month inquiry by the Productivity Commission will examine the regulatory impact in a range of areas, including farming practices, productivity, sustainability and property values and returns.

**http://www.pc.gov.au/inquiry/nativevegetation/index.html**

### Tussock Grasslands

The New Zealand website on the ecology and management of tussock grasslands now has a newsletter on fire management research and some new links.

**http://www.tussocks.net.nz**

### Native Grasses: the True Survivors (ABC Earthbeat)

Throughout the drought the only green grass left on many properties was native. Having seen the benefits, farmers now want to plant more native grasses but the seeds are rare and expensive — up to $500 per kilogram.

Full transcript is available at:
**http://www.abc.net.au/rn/science/earth/stories/s797874.htm**

# Publications and Information Resources

### Catalogue of Australian Lichens

*Patrick McCarthy*

*ABRS, 2003*

This catalogue lists 396 genera and 3138 species and infraspecific taxa of lichens known from Australia and its external island territories. Each genus is accompanied by a chronological list of literature citations that provide locality details, descriptions, identification keys and/or habitat information.

For more information see: http://ea.gov.au/biodiversity/abrs/publications/index.html

### Orchids of Australia

*D Banks and J Riley*

*UNSW Press, 2002*

This book describes 150 species from all parts of Australia and includes epiphytic as well as terrestrial species. Many are well known and widespread while others are extremely rare and some only recently discovered and described. All 150 species are given two pages — one full page of colour illustrations with text and distribution map opposite. The illustrations are true botanical drawings, with the floral parts painstakingly dissected and faithfully reproduced in life-like colour.

For more information contact: UNSW Bookshop
Ph: (02) 9385 6622 Fax: (02) 9385 6633
Email: webmaster@bookshop.unsw.edu.au

### Key to the Genera of Australian Mosses

*W.R. Buck, D.H. Vitt, W.M. Malcolm*

*ABRS, 2002*

The first illustrated identification guide to the 291 genera of mosses known from Australia and its island territories. A selected bibliography of checklists, monographs and other publications of particular relevance to Australia is included. The key is supplemented by almost 700 colour illustrations.

To purchase contact CSIRO Publishing, PO Box 1139, Collingwood, Vic 3066 Ph: (03) 9662 7666 Fax: (03) 9662 7555 Email: publishing@csiro.au Website: http://www.publish.csiro.au/books/bookpage.cfm?PID=3394

### Threatened Species of the Upper North Coast of New South Wales: Flora

*NSW National Parks and Wildlife Service, 2002*

A handbook for the general public that includes profiles of threatened species. For more information see: http://www.nationalparks.nsw.gov.au

### Plant Conservation in the Tropics: Perspectives & Practice

*M Maunder, C Clubbe, C Hankamer &*
*M Groves (editors), 2002*
*Kew: Royal Botanic Gardens*

Presents a series of case studies designed to give plant conservation in the tropics:

- Familiarity with implementation of the Convention on Biological Diversity in line with current practice
- Best practice from material developed by The World Conservation Union Species Survival Commission (IUCN/SSC) including application of the IUCN Red List Categories of Threat.

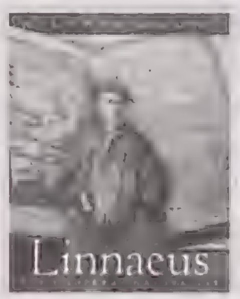
Provides tools for: national biodiversity action planning; habitat assessment, restoration and management techniques; assessment of species threat and species recovery planning **(by Jeanette Mill, ANPC)**; community participation and assessment of sustainable use; role of horticulture in species recovery and sustainable management; and capacity building including networking and the design of training courses.

To order online: http://www.kewbooks.co.uk

### The Compleat Naturalist: A Life of Linnaeus

*W. Blunt*

*Princeton University Press, 2002*

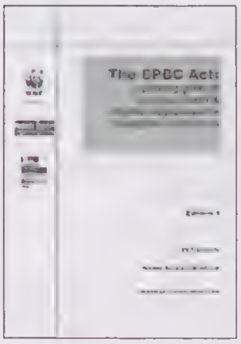


A revised edition of Blunt's Linneaus biography originally published in 1971. This illustrated edition features a new introduction by Professor William T. Stearn.

For further information: http://www.andrewisles.co/currentlists/genbiographylit.htm

### The EPBC Act: A Planning Guide for Local Government and Regional Natural Resource Management Committees

*WWF Australia, Humane Society International and Tasmanian Conservation Trust Inc.*


The EPBC Act:

This guide provides overviews, checklists and additional information that show the key elements of the EPBC Act that need to be considered when preparing NRM plans, local area plans and site management plans.

This guide is free. You can obtain copies from:

Ph: 02 6257 4010 Email: amacintosh@wwf.org.au
Internet: http://www.wwf.org.au/default.asp?p=publications.htm

### New Journal — *Systematics and Biodiversity*

The IUCN Species Survival Commission has let us know that Cambridge University Press recently announced the launch of *Systematics and Biodiversity*, an international life science journal devoted to whole organism biology, especially systematics and taxonomic biodiversity.

For details go to:

http://publishing.cambridge.org/stm/biosciences/sibs/journals/

### Victoria's Box-Ironbark Country: A Field Guide

*Dr Malcolm Calder and Jane Calder, with photographs by Ian McCann and others.*

This 120-page book offers an excellent introduction to the natural history of the region, and an accessible and current guide to its flora. Over 200 colour photographs reveal in rich detail the subtle beauty of box-ironbark country.

Recommended retail price is $29.95 or $25.50 for Victorian National Parks Association (VNPA) members. It's available from book shops and outdoor stores as well as direct from the VNPA (add $4.50 for postage and packaging within Australia only).

Also available from the VNPA are the 'in flower' books of Ian McCann: *The Grampians in Flower*, *The Alps in Flower*, and *The Coast and Hinterland in Flower*.

Website: http://www.vnpa.org.au

## Conferences & Workshops, Courses & Fieldwork

### 3rd International Wildlife Management Congress

*1–5 December 2003, Christchurch New Zealand*

The congress will have a strong Pacific and southern hemisphere flavour, but the main focus will be on contrasting perspectives on wildlife management in the northern and southern hemispheres.

For more information contact the Wildlife Congress Secretariat, The Conference Office, Centre for Continuing Education, University of Canterbury, Private Bag 4800, Christchurch, New Zealand.

Ph: + 64 3 364 2915; Fax + 64 3 364 2507
Email: wildlife@cont.canterbury.ac.nz
**http://www.conference.canterbury.ac.nz/wildlife2003**

### International Botanical Gardens Conference

*15–18 July 2003, Bali Botanic Gardens, Indonesia*

Subjects to be addressed by this conference are botanic gardens and management, plant conservation and society benefits.

Contact: Hendrian, Center for Plant Conservation, Bogor Botanic Gardens, LIPI, Jl. Ir. H. Juanda no. 13 Bogor Indonesia
Tel. +62 251 322187, 336935; Fax. +62 251 322187
Email: kriblipi@bogor.wasantara.net.id; inetpc@indo.net.id

### VIIth Australian Bryophyte Workshop,

*4–9 October 2003, Mt Baw Baw, Victoria*

This workshop will be organised by the National Herbarium of Victoria. Contact Pina Milne Ph: 03 9252 2309 Email: Pina.Milne@rbg.vic.gov.au.

### ESA ECOLOGY 2003 (Ecological Society of Australia)

*8–10 December 2003, University of New England, Armidale, NSW*

Contact: Nick Reid by email at nrei3@metz.une.edu.au, or phone on (02) 6773 2769.

### 22nd ASGAP Conference and Seminar

*9–16 January 2004, Launceston, Tasmania*

This conference of the Association of Societies for Growing Australian Plants will include seminars, meetings and field trips to the Tamar River and Cataract Gorge. Pre- and post-conference tours have also been planned.

For more information contact the Australian Plants Society Tasmania, PO Box 75, Exeter, Tas. 7275.
Email: wwredwood@bigpond.com.

### Bush fire management tours

The NSW Nature Conservation Council is currently running bush fire management tours. The tours focus on bush fire risk management strategies, property level preparedness, and the protection of the environment.

Planned tours are to the inland in July, north coast in late August, and south coast in late September.

Contact NCC fire education officer Angela Baker at bushfire@nccnsw.org.au or abaker@nccnsw.org.au, phone 02 9279 2855 or go to http://www.nccnsw.org.au.

# Regional Groups

## NSW South West Slopes

*Paul Scannell, Albury Botanic Gardens*
*Email pscannell@alburycity.nsw.gov.au*

### NPWS Crimson Spider Orchid Recovery Plan

Rain in bits and pieces, but it is rain!! We had some small falls in April and 30 mm just recently and bush that has looked dry and devastated is showing signs of recovery. We have five crimson spider orchid leaves emerging slowly and hope that the rain may see the other nine poke through soon.

We are compiling further data records into tables, to compare notes with other caretakers of similar *Caladenia* (*Arachnorchis*) populations. These may be used to instigate in-situ treatments in the future in an attempt to increase numbers.

Communications will continue with the group caring for the crimson spider orchids at the Chiltern Box–Ironbark National Park to improve our knowledge of these highly threatened marvels.

### Community Biodiversity Survey

In partnership with Riverina TAFE, AlburyCity and several community groups are hosting a "Community Biodiversity Survey" in September 2003. Areas not surveyed in the past will be intensively surveyed by eight-part tests, or EIS's. This will give AlburyCity and the community valuable data so these areas can be managed appropriately. The community will be encouraged to participate so that it will better understand the value and importance of the cute and cuddlies, spectacular flowers and great views.

### Garden Guide

AlburyCity worked closely with NPWS to produce the *Garden Guide for Albury*, highlighting bush-friendly local natives and exotics. Thousands contributed and, by using market research contracted by the NPWS, we were able to produce a user-friendly booklet that aims to reduce water use and, most importantly, reduce environmental weeds that threaten so much of our bush.

### Bushfire Protection Zones

As part of the Rural Fire Services Act, AlburyCity have to install asset protection zones (APZs) in our bushland areas that adjoin housing estates. However, this means putting APZs through box woodland that is an endangered ecological community.

After intensive multi-agency meetings and some great guidance from Ian Davidson (wildlife consultant) and NPWS, we have a suggested process to modify the 100-year-old regrowth box woodland into more of a grassy box woodland, and satisfy as many groups as possible. This will help us to retain the mature, hollow-bearing trees and revegetate areas with native grasses. It will allow the APZs to satisfy Rural Fire Service requirements and still produce a good outcome for squirrel gliders and woodland birds.

For any inquiries, please contact us at the AlburyCity Parks & Recreation Business Unit on 02 60 238 769, fax 02 60 238 166, E-mail pscannell@alburycity.nsw.gov.au

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# ANPC Membership List

Please note: the date in brackets indicates the calendar year the member has joined or renewed for (January–December). Addresses and names of contact persons are available from the National Office.

### Corporate Members

ACT Parks and Cons. Service, ACT (2001)
Alcoa World Alumina Australia, WA (2002)
Aust Institute of Horticulture Inc, NSW (2002)
Australian National Botanic Gardens, ACT (2002)
Aust Tree Seed Centre (CSIRO), ACT (2001)
Botanic Gardens of Adelaide, SA (2003)
Brisbane Botanic Gardens, QLD (2003)
Centre for Mined Land Rehabilitation, QLD (2002)
Centre for Plant Biodiv Rsch, ACT (2002)
Centre for Plant Conservation Genetics, Southern Cross Uni., NSW (2003)
City of Albury, Parks & Recreation Business Unit, NSW (2002)
Coffs Harbour City Council, NSW (2003)
Council of the City of Orange - Orange Botanic Gardens, NSW (2001)
CSIRO Publishing, VIC (2000)
Dept of Conservation and Land Management, WA (2003)
Dept Infrastructure, Planning & Environment, NT (2003)
Tasmanian Parks & Wildlife Service, TAS (2002)
Flecker Botanic Gardens, QLD (2001)
Forestry Tasmania, TAS (2000)
Geelong Botanic Gardens - City of Greater Geelong, VIC (2001)
Kings Park and Botanic Garden, WA (2001)
Maroochy Shire Council, QLD (2002)
NSW National Parks & Wildlife Service, NSW (2002)
Pacific Power, NSW (2000)
Qld Parks and Wildlife Service (Central Region), QLD (2002)
Queensland Herbarium, Dept of Environment & Heritage, QLD (2002)
Redland Shire Council, QLD (2002)
Roads and Traffic Authority, NSW (2001)
Royal Botanic Gardens Melbourne, VIC (2002)
Royal Botanic Gardens Sydney, NSW (2003)
Royal Tasmanian Botanical Gardens, TAS (2003)
Standing Committee on Forestry, ACT (2001)
Strathfield Municipal Council, NSW (2003)
Australian Arid Lands Botanic Garden, SA (2001)
Townsville City Council, QLD (2002)
WMC Olympic Dam Operations, SA (2003)
Wollongong Botanic Garden, NSW (2000)
Zoological Parks and Gardens Board of Victoria, VIC (2003)
Zoological Parks Board of NSW, NSW (2002)

### International Associates

#### Canada

Canadian Botanical Conservation Network, (2002)
David Brackett, IUCN SSC, (2002)
Roy L Taylor, (2003)

#### Fiji

South Pacific Regional Herbarium, (2000)

#### Germany

Botanischer Garten und Botanisches, (2002)

#### India

Alexander Amirtham, (2002)
Indian Society for Conservation Biology, (2002)
Prof Suresh Pathiki, (2003)

#### Indonesia

Botanic Gardens of Indonesia (Kebun Raya), (2002)
Eka Karya Botanic Garden, (2002)
Indonesian Network for Plant Conservation, (2002)

#### New Zealand

Auckland Plant Collections Network, (2002)
David Given, (2003)
Neil Mitchell, (2002)
Timaru Botanic Gardens, (2003)
Wellington Plant Conservation Network, (2002)

#### Papua New Guinea

Paul Chatterton, (2002)

#### South Africa

John Donaldson, (2002)
National Botanical Institute, (2002)
Southern African Botanical Diversity Network (SABONET), (2002)

#### Sri Lanka

Zackeriya Mohamed Zarook, (2002)

#### Switzerland

Conservatoire et Jardin Botaniques, (2002)
Wendy Strahm, (2002)

#### UK

Botanic Gardens Conservation Intl, (2002)
IUCN/SSC UK Office, (2002)
PlantNet, (2002)
Royal Botanic Gardens Kew, (2002)
Timothy Walker, (2003)

#### United Arab Emirates (UAE)

IUCN/SSC Re-introduction Specialist Group, (2002)

#### USA

Center for Plant Conservation, (2002)
Darren Touchell, (2002)
Don Falk, (2002)
ECO-SEA, (2002)
Georgia Endangered Plant Stewardship Network, (2002)
Missouri Botanical Garden Library, (2003)

#### Western Samoa

Vailima Botanic Gardens, (2002)

### Community Groups

Association of Societies for Growing Australian Plants, NSW (2003)
Aust Plants Society - Central West Grp Inc, NSW (2002)
Aust Plants Society - Newcastle Grp Inc., NSW (2000)
Aust Plants Society - North Shore Group, NSW (2001)
Aust Plants Society - Northern Grp Inc, TAS (2001)
Aust Plants Society - Nowra Group, NSW (2002)
Aust Plants Society - South West Slopes, NSW (2003)
Aust Plants Society - SW Slopes, NSW (2000)
Aust Plants Society, NSW (2003)
Australasian Regional Assoc of Zoological Parks & Aquaria, NSW (2002)
Australian Association of Bush Regenerators, NSW (2002)
Australian Native Plant Society (ACT), ACT (2003)
Australian Plants Society - Warringbah, NSW (2002)
Blue Mtns Wildplant Rescue Service, NSW (2001)
Burrendong Arboretum, NSW (2001)
Canberra and South-East Region Environment Centre, ACT (2002)
Dept Land and Water Conservation, NSW (2002)
Friends of Eurobodalla Regional Botanic Gardens, NSW (2000)

Friends of Grasslands, ACT (2003)
Friends of Lismore Rainforest Botanic Gardens, NSW (2001)
Friends of Peter Francis Points Arboretum, VIC (2003)
Friends of the Australian National Botanic Gardens, ACT (2003)
Greening Australia - South West Slopes, NSW (2003)
Greening Australia Ltd, ACT (2001)
Greening Australia NSW Inc., NSW (2002)
Hunter Region Botanic Gardens Ltd., NSW (2002)
Indigenous Flora and Fauna Association, VIC (2000)
Merri Creek Management Committee, VIC (2000)
Monarto Zoological Park, SA (2000)
Olive Pink Botanic Garden, NT (2003)
Pangarinda Arboretum Committee, SA (2002)
Royal Zoological Society of SA Inc., SA (2002)
SGAP - Dryandra Study Group, WA (2002)
SGAP - Ipswich Branch, QLD (2000)
SGAP - NSW Ltd - Blue Mountains Group, NSW (2003)
SGAP - Qld Region Inc., QLD (2002)
Stony Range Flora & Fauna Reserve, NSW (2002)
The Tasmanian Arboretum Inc, TAS (2003)
Threatened Species Network, NSW (2002)
Threatened Species Network, NT (2002)
Threatened Species Network, QLD (2002)
Threatened Species Network, SA (2002)
Threatened Species Network, TAS (2002)
Threatened Species Network, VIC (2002)
Threatened Species Network, WA (2002)
Trust for Nature, VIC (2001)
Victorian National Parks Association, VIC (2002)
Wildflower Society of WA - Northern Suburbs Branch, WA (2003)
Wildflower Society of WA Inc, WA (2000)
Wildlife Preservation Society of Australia Inc, NSW (2004)
World Wide Fund for Nature Australia, NSW (2001)

## Individual Members

Andrew Pengelly, NSW (2001)
Gail Abbott, NSW (2003)
A/Prof Paul Adam, NSW (2002)
Jan Allen, NSW (2001)
Ian Anderson, ACT (2003)
Sarah Ashmore, QLD (2003)
N Ashwath, QLD (2000)
Robert Attwood, NSW (2002)
John Augustus, NSW (2003)
Ian Baird, NSW (2003)
Andy Baker, NSW (2003)
Katherine Baker, WA (2002)
Clive Barker, NSW (2002)
Sarah Barrett, WA (2002)
Tamera Beath, NSW (2002)
Margaret Bell, NSW (2001)
Stephen Bell, NSW (2002)
John Benson, NSW (2003)
Dr Dana Bergstrom, QLD (2000)
Dr Leone Bielig, QLD (2002)
Dr Caron Blumenthal, NSW (2002)
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Max Bourke, ACT (2003)
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Dr A.H.D. Brown, ACT (2002)
Claire Brown, ACT (2003)
Dianne Brown, NSW (2003)
Jerome Bull, WA (2002)
John Burdett, ACT (2003)
Dr G Burrows, NSW (2003)
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Liz Caddick, QLD (2004)
Stephen Campbell, NSW (2002)
Geoff Carr, VIC (2003)
Irene Champion, QLD (2003)
Gordon Chenery, VIC (2003)
John Clarkson, QLD (2003)
Dr Anne Clements, NSW (2002)
Anne Coates, WA (2002)
Dr Terry Coates, VIC (2002)
Anne Cochrane, WA (2002)
Ian Cole, NSW (2000)
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Ben Correy, NSW (2002)
Meredith Cosgrove, ACT (2002)
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Tim Coutts, ACT (2003)
Ian Cox, NSW (2004)
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Darren Crayn, NSW (2003)
Simon Cropper, VIC (2001)
Michael Cruikshank, NSW (2003)
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Claire de Lacey, NSW (2004)
Mojca Debevec, NSW (2002)
John Delpratt, VIC (2003)
Sally Dillon, QLD (2003)
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Ian (Bob) Dixon, WA (2002)
Michael Doherty, ACT (2003)
Ross Doig, NSW (2003)
Wendy Dossetor, NSW (2002)
Steve Douglas, ACT (2002)
Tania Dow, NSW (2002)
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David Duncan, ACT (2002)
Christopher Dwyer, NSW (2003)
Gill Earl, NSW (2000)
Robbie Economos-Shaw, NSW (2003)
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Frances Eliot, NSW (2003)
Rodger Elliot, VIC (2003)
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Salli Felton, NSW (2001)
Lance Fitzgerald, NSW (2001)
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Paul Foreman, VIC (2000)
Fig Forest, NSW (2002)
Annabel Forsyth, ACT (2002)
Julie Foster, ACT (2002)
Ian Fox, QLD (2003)
Susannah Frahey, NSW (2002)
Judy Frankenberg, NSW (2000)
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Elizabeth George, WA (2003)
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Jed Gillian, TAS (2002)
Kaye Glennon, WA (2003)
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Sue Gould, QLD (2003)
Robert Gourlay, ACT (2000)
William Grattan, NSW (2001)
Pamela Gray, NSW (2002)
Brad Green, NSW (2002)
Wayne Griggs, TAS (2003)
Fiona Hall, ACT (2002)
Joe Halloran, ACT (2002)
Kim Hamilton, QLD (2003)
Kate Hammill, NSW (2003)
Gwen Harden, NSW (2002)
Daryl Harman, NSW (2001)
Mary Harris, NSW (2002)
Wayne Harris, QLD (2002)
Janelle Hatherly, NSW (2000)
Wendy Hawes, NSW (2002)
Marion Hawley, NSW (2002)
Rebecca Hayes, NSW (2003)
Els Hayward, TAS (2001)
David Hicks, NSW (2003)
Elizabeth Hinton, NSW (2003)
Dr Patricia Hogbin, NSW (2003)
Keith Holmes, NSW (2003)
Bill Holzinger, NSW (2002)
Irene Horneman-Story, QLD (2001)
Elsie Howe, NSW (2002)
Sue Hughes, VIC (2002)
Ann Hunter, WA (2002)
John Hunter, NSW (2002)
John Hunter, NSW (2002)
Ian Hutton, NSW (2001)
Susan Innes, ACT (2000)
Ruth Jackson, VIC (2002)
Megan Jones, NSW (2002)
Lynne Kavanagh, NSW (2002)
Norman Kemble, VIC (2003)
Jeanette Kemp, QLD (2002)
Lincoln Kern, VIC (2003)
Malcolm King, SA (2002)
Leanne Knight, NSW (2002)
Heather Knowles, QLD (2002)
Patty Kolln, NSW (2001)
Chris Laley, NSW (2002)
Rob Lamont, QLD (2004)
Dr Jill Landsberg, QLD (2002)
Dr Peter Lawrence, QLD (2000)
Andrea Leigh, ACT (2003)
Gary Leonard, NSW (2002)
Emma Lewin, ACT (2002)
Tony Lewis, NSW (2003)
Gordon Limburg, NSW (2003)
Willem Lindemans, VIC (2002)
Joan Lindros, VIC (2003)
Debra Little, NSW (2002)
Gregory Little, NSW (2000)
Michael Lloyd, QLD (2002)
Judith Locke, VIC (2003)
Dr Con Lokkers, QLD (2003)
Vicki Long, WA (2003)
Jeff Lugg, SA (2003)
Ian Lunt, NSW (2003)
Stephanie Lymburner, NSW (2003)
Alexander Mackenzie, NSW (2003)
Elizabeth MacPhee, VIC (2001)
Bob Makinson, NSW (2003)
Marcus Mantscheff, VIC (2001)
David Mason, NSW (2000)
Damian McCann, NSW (2002)

Amanda McDonald, NSW (2003)
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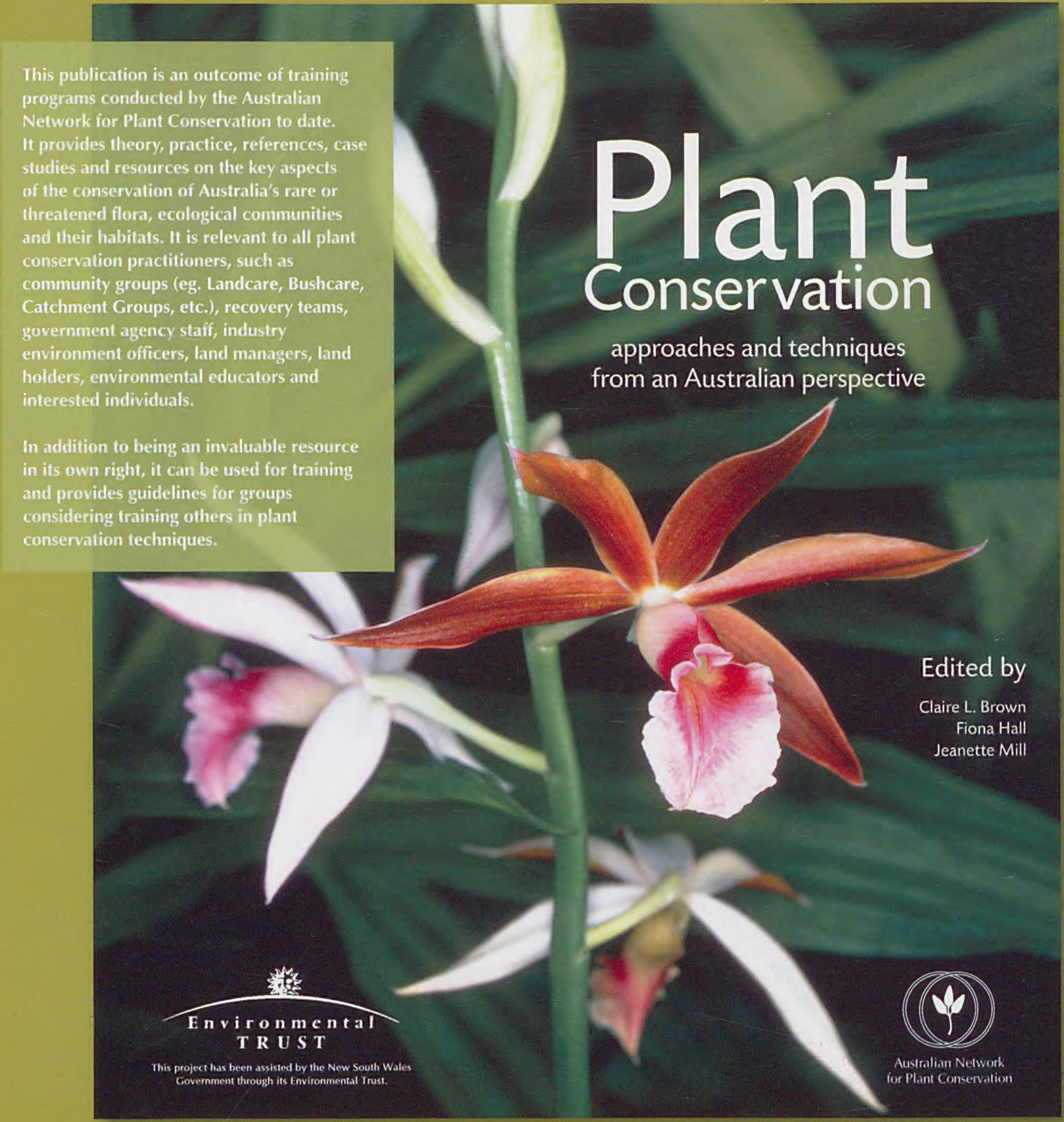

This publication is an outcome of training programs conducted by the Australian Network for Plant Conservation to date. It provides theory, practice, references, case studies and resources on the key aspects of the conservation of Australia's rare or threatened flora, ecological communities and their habitats. It is relevant to all plant conservation practitioners, such as community groups (eg. Landcare, Bushcare, Catchment Groups, etc.), recovery teams, government agency staff, industry environment officers, land managers, land holders, environmental educators and interested individuals.

In addition to being an invaluable resource in its own right, it can be used for training and provides guidelines for groups considering training others in plant conservation techniques.

# Plant Conservation

approaches and techniques from an Australian perspective

Edited by

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Fiona Hall
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